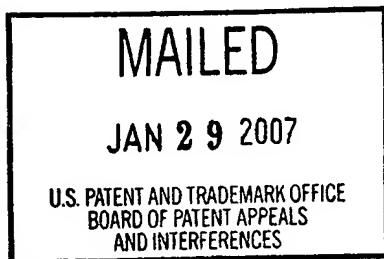


The opinion in support of the decision being entered today was *not* written for publication and is *not* binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte DARYL S. MEREDITH, THOMAS R. KAYE JR,
THOMAS TREVOR BLUDIS, MARIA I. KENYON, WILLIAM R. STUMPF,
MICHAEL L. O'BANION, CRAIG A. OKTAVEC,
STUART J. WRIGHT, MARK E. BRUNSON and
CARRIE L. PUSCHMANN



Appeal No. 2006-1915
Application No. 10/056,312
Technology Center 3700

Before JENNIFER D. BAHR, STUART S. LEVY, and ROBERT E. NAPPI,
Administrative Patent Judges.

BAHR, *Administrative Patent Judge.*

DECISION ON APPEAL

Daryl S. Meredith et al. (appellants) appeal under 35 U.S.C. § 134 from the examiner's decision rejecting claim 1. Claims 2-24 have been canceled. We have jurisdiction over this appeal under 35 U.S.C. § 6.

We AFFIRM.

THE INVENTION

The appellants have invented a miter saw having greater cutting capacity. In essence, the appellants' invention displaces the motor, and motor housing, from a saw blade axis to a position which permits a greater range of mitering without interference with the workpiece. The appellants' invention accomplishes this in part by providing a first gear G on the saw blade arbor A, an intermediate gear G2 meshing with the first gear, and a second gear G3 driven by a motor M and meshing with the intermediate gear. The motor drives the second gear via a belt B, rather than directly, to achieve additional displacement of the motor. Claim 1, the only claim pending in this application, reads as follows:

1. A miter saw comprising:
 - a base assembly;
 - a rotatable table rotatably connected to the base assembly and having a plane;
 - a saw assembly including a motor, and a blade disposed on an arbor, the arbor having a first portion carrying the blade, a second portion disposed away from the blade, and a first gear disposed on the second portion, an intermediate gear meshing with the first gear, and a second gear driven by the motor and meshing with the intermediate gear, wherein the intermediate gear is always meshing with the first and second gears, the second gear being driven by the motor via a belt; and
 - a pivot arm pivotally attached to the table and supporting the saw assembly, the pivot arm and saw assembly being pivotable about a horizontal bevel axis from a first position where the blade is substantially perpendicular to the table to a second position where the blade is disposed at an angle relative to the table, the

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angle between the blade and the table being about 45 degrees;

wherein a distance between the second portion and at least one of the base assembly and the table is smaller than a distance between the first portion and the at least one of the base assembly and the table when the saw assembly is in the second position.

THE EVIDENCE

The examiner relies upon the following as evidence of unpatentability:

Ushiwata	US 5,425,294	Jun. 20, 1995
Tsune	US 5,974,927	Nov. 02, 1999

THE REJECTION

The appellants seek review of the examiner's rejection of claim 1 under 35 U.S.C. § 103(a) as being unpatentable over Ushiwata in view of Tsune.

The examiner reasons in support of the rejections in the examiner's answer (mailed September 22, 2005) and the supplemental examiner's answer (mailed January 25, 2006). The appellants present opposing views in the appellants' brief (filed June 24, 2005), reply brief (filed November 10, 2005), and second reply brief (filed February 13, 2006).

OPINION

Ushiwata discloses a desk-top cutting machine. Ushiwata's cutting machine includes a support member 3 secured on base 1 for supporting a workpiece 16, a saw shaft 9, a circular saw 10, a motor 11 for rotating the saw, and a transmission

means for transmitting rotation from the motor shaft 12 to the saw shaft 9 (col. 2, ll. 41-67). Ushiwata discloses two different embodiments of the transmission means. In the first embodiment (Figs. 1 and 2), the transmission element is a belt 13. In the second embodiment (Figs. 12 and 13), the transmission means is a gear 17 (col. 3, ll. 21-23). According to Ushiwata, disposal of the motor shaft in parallel with the saw shaft, over the saw shaft, permits the saw assembly to be tilted toward the side of the motor (col. 3, l. 65 to col. 4, l. 1).

Tsune discloses a circular saw cutting machine provided with a backlash eliminator 16. Tsune (col. 1, ll. 12-18) describes backlash as follows:

In circular saws of the type described above, upon starting of the cutting of the workpiece to be cut by rotation of the saw, vibration or impact can occur in the saw due to a backlash between a final stage gear and an earlier stage gear engaging each other in the saw drive. Such vibration or impact on the saw inherently degrades the accuracy of the cutting of the workpiece and can cause damage to the saw.

In Tsune's machine, a saw drive 8 rotates a saw blade 4. The saw blade is mounted on a saw shaft 7. The saw drive 8 includes a plurality of geared driving stages. The saw drive 8 also includes a motor (not shown) and drive shaft 10, an intermediate transmission shaft 11 arranged between the drive shaft 10 and saw shaft 7 parallel to the drive shaft 10, gears 12 and 13 for transmitting rotation of the drive shaft 10 to the intermediate shaft 11, and gears 14 and 15 for transmitting rotation of the intermediate shaft 11 to the saw shaft 7. The motor drives the drive

shaft via a belt (not shown) and a pulley 9. Col. 2, ll. 8-22. A backlash eliminator 16 is provided on the final stage gear 15. The backlash eliminator 16 can temporarily brake the final stage gear 15 upon the saw blade 4 initiating cutting the workpiece to eliminate backlash between the final stage gear 15 and the preceding stage gear 14. Col. 2, ll. 23-28.

Tsune's backlash eliminator 16 includes a braking gear 17 meshing with the final stage gear 15, a brake shaft 18 carrying the braking gear 17 and a brake disk 19, a pair of calipers 21 having brake pads 20 sandwiching the brake disk 19, and a hydraulic cylinder 22 alternating the calipers 21 to open and close between a braking position and a release position (col. 2, ll. 29-40). The backlash eliminator does not include the pulley 9 or the belt connected between the pulley and the motor.

Apparently relying on the second embodiment (Figs. 12 and 13), the examiner finds that Ushiwata discloses all of the limitations of claim 1 except the motor driving the second gear (i.e., motor shaft 12) via a belt (answer, p. 3).

The appellants concede that Ushiwata discloses all elements of claim 1 except the second gear being driven by the motor via a belt (brief, p. 4).

The examiner contends that it would have been obvious "to provide a belt in Ushiwata as taught by Tsune in order to provide a backlash eliminator assembly, which eliminates backlash between gears" (answer, p. 3). Specifically, the examiner proposes replacing Ushiwata's motor 11 with a pulley, as taught by Tsune, and then relocating the motor to make room for the backlash eliminator 16. *Id.* The examiner reasons that "Figure 2 of Tsune suggests that there is not enough

room for the backlash eliminator and the motor to be adjacent one another, and therefore the motor, belt and pulley system are utilized.” *Id.*

The appellants do not dispute the examiner’s position that it would have been obvious to provide a backlash eliminator 16 on the Ushiwata saw shaft 9. Moreover, the examiner’s position appears reasonable on its face. Specifically, Tsune’s teaching of the need for backlash elimination on circular saws to protect both the workpiece and the saw would have suggested to a skilled artisan that backlash elimination would be advantageous on the circular desk-top saw of Ushiwata. We therefore adopt the examiner’s position that it would have been obvious to provide a backlash eliminator on the Ushiwata saw shaft 9.

The appellants do argue that Tsune’s backlash eliminator does not include the pulley 9 or a belt. Consequently, according to the appellants, “[b]ecause pulley 9 and belt do not assist in the backlash eliminating function, a person skilled in the art [would not install] a pulley and/or belt to provide a backlash eliminating function pursuant to Tsune” (brief, pp. 5-6). Therefore, the issue before us is whether it would have been obvious to provide Ushiwata with a transmission belt between the motor 11 and second gear (motor shaft 12) to drive the second gear to accommodate, or make room for, the backlash eliminator.

The appellants’ reference to US Pat. No. 5,823,081 (Tsune ‘081) on page 6 of the appeal brief is a bit of a red herring. First, as aptly pointed out by the examiner (answer, pp. 4-5), Tsune ‘081 is silent as to how the gear 74 is driven. Moreover, even assuming that Tsune ‘081 establishes or even suggests that a transmission element, such as a gear, other than a belt, *could* be used to displace the

motor from the rotation axis of the driven shaft to accommodate the backlash eliminator, as urged by the appellants (reply brief, p. 3), the salient point is that the appellants “agree that the motor is spaced away and that a power transmission mechanism, such as intervening gears, would be useful” (second reply brief, p. 3). Stated differently, the appellants concede that a skilled artisan would have found it “useful,” and thus obvious, to provide a transmission mechanism to space the motor to accommodate a backlash eliminator. In the face of the appellants’ concession, we conclude that Tsune’s teaching of a belt and pulley as the transmission mechanism connected between the motor and the drive shaft would have provided the artisan with ample motivation to provide a belt and pulley to space Ushiwata’s motor 11 from the drive shaft (motor shaft 12) to accommodate a backlash eliminator. That other transmission mechanisms, such as intervening gears, might also be reasonable candidates as the transmission mechanism to provide spacing in no way dissuades us from this conclusion.

For the reasons discussed above, the arguments in the appellants’ brief and reply briefs fail to persuade us the examiner erred in rejecting claim 1 as being unpatentable over Ushiwata in view of Tsune. We therefore affirm the rejection.

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SUMMARY

The decision of the examiner to reject claim 1 is AFFIRMED.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a). *See* 37 CFR § 1.136(a)(1)(iv).

AFFIRMED


JENNIFER D. BAHR

Administrative Patent Judge


STUART S. LEVY

Administrative Patent Judge


ROBERT E. NAPPI

Administrative Patent Judge

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